

REMARKS

Amended claim 1 corresponds to original claim 1 with the features of original claims 2 and 8 incorporated therein.

Amended claim 11 corresponds to original claim 11 with the features of original claim 16 incorporated therein. Also, the expression "electric motor(s)" has been replaced by "electric motor or motors driving the positioning screws".

Claims 2, 8 and 16 have been deleted.

In order to overcome the examiners objection, "line(s)" has been replaced by "line or lines" in claims 1 and 11.

Amended claim 1 now defines that the switch matrix includes a plurality of electrically conducting main contact pads disposed thereon and arranged in a plurality of contact trains, and that the contact means includes a set of main contact springs that are slidably engageable with said main contact pads for cross-connecting the lines, and that said switch matrix further comprises a first and a second set of detector pads disposed thereon in proximity with said contact trains, and that the contact means further includes corresponding sets of detector springs that are slidably engageable with said first and second set of detector pads for detecting the precise position of the contact means.

With the apparatus of claim 1, it is possible to know where the contact means are on the switch matrix at all times. The position of the contact means can be determined at any time by sensing the present position by means of the detector pads and the detector springs. Also, the apparatus of claim 1 enables the drive means to be "exercised" without disrupting existing service connections. As part of regular maintenance procedures it is often advantageous to exercise the moving components periodically to help keep them in working condition. This becomes important over time since cross-connects on the switch matrix board may experience long periods of inactivity until it is next called upon to change states. This is especially the case when there is an established phone service for a line that may be connected for many years, for example. It also becomes possible to exercise the mechanism while maintaining the break position i.e. when there is no existing cross-connect established. The maintenance exercise routines can be performed remotely from the central office without having to send a technician to the MDF site, which is of great advantage. Furthermore, the apparatus of claim 1 enables the contact pads to be "cleaned" while maintaining the existing cross-connect. There is a small range in which the contact springs can move backwards and forwards over the contact pads without breaking the connection. Moving the contact springs periodically over the contact pads keeps the pads clear from any dust or particles that may have accumulated over time that could interfere with the electrical connection.

Pickens does not provide a way to determine the actual position of the shorting elements. Although it is theoretically possible to calculate position of the shorting elements by counting the stepper motor pulses, the position information would be lost if there is a power outage or if loss of synchronization occurs if the gears slip, for example. See Pickens column 3 lines 56-65. Recovering the position information would require moving the contact elements to a reset

position thereby causing highly undesirable service interruptions for the existing connections. Further, without precise position information, it is not possible to perform the above described maintenance functions (exercising and cleaning).

Thus, the invention according to claim 1 is novel.

As has been described, Pickens does not provide detector pads and detector springs for sensing the present position of the contact means at any time. Rather, Pickens suggests calculating the position of the shorting elements by counting the stepper motor pulses. The advantages of the invention according to claim 1 have been described above, and also in the application as filed. Pickens points away from the solution of the present invention by suggesting calculating the position of the shorting elements by counting the stepper motor pulses. Therefore it is respectfully submitted that the invention according to claim 1 is not obvious to a skilled person.

Amended claim 11 defines a method of automating a switch matrix apparatus where the position of the contact means is detected and, if necessary, based on the detected position, adjusted. The contact means is accurately positioned on the switch matrix by control means in communication with the position detection means and electric motor or motors driving the positioning screws.

The advantages achieved by the method according to claim 11 are described above with reference to claim 1. Pickens does not provide a method where the position of the shorting elements is detected, or where the shorting elements are positioned by control means in communication with position detection means and electric motor or motors. Instead, the position of shorting elements must be calculated by counting the stepper motor pulses.

Thus it is submitted that the invention according to claim 11 is novel and, for the same reasons as above, not obvious to a skilled person.

In the event there are any questions concerning this Amendment, or the application in general, the Examiner is respectfully urged to telephone the undersigned so that prosecution of the application may be expedited.

No additional fees are believed to be due at this time however if necessary to effect a timely response the Commissioner is authorised to deduct the necessary fees from Deposit account No. 501249.

Respectfully submitted,

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